

## REMARKS

Claims 1-5, 10-14, 19-23 and 28-31 are pending in this application. All claims are rejected.

Pending claims 2, 5, 10-14, 20 and 31 are canceled from this application.

Claims 1 and 19 are amended by incorporating the substance of claims 2 and 20 therein. Claims 28 and 30 have been amended to more correctly reflect the invention that is the subject of this application.

Claim 23 has been amended to correct a minor editorial error. No new matter has been added.

New claims 32 and 33 have been added. Support for new claim 32 can be found at p. 7, 17-20 and FIGS. 5 and 6 of the drawings. Support for new claim 33 can be found at p. 15, 6-17. No new matter has been added.

REJECTION UNDER 35 USC §102

Claims 1, 10, 19 and 28-31 are rejected as being anticipated by Griffiths (6,270,641). Applicant traverses the rejection.

Claims 1, 19 and 28 recite a microchannel system comprising at least two microchannels joined together to form a junction at their intersection. Claims 1, 19 and 28 further recite that a region of reduced effective cross-sectional area extends from the junction into the microchannel a distance of at least 0.5 to 4 microchannel widths.

Rejection appears to be based on the assertion that Griffiths discloses a microchannel system that reads on the claimed invention. Griffiths discloses and claims methods for reducing or eliminating sample dispersion in turns in a microchannel by engineered contractions and expansions of the microchannel to skew the sample profile in a manner that just offsets the sample distortion occurring in the turn (col. 13, 1-5). Notwithstanding the fact that the purpose of the invention and thus the channel geometry disclosed is different from that claimed, nowhere does Griffiths read upon one of the microchannels having a reduced effective

cross-sectional area proximate the junction formed by the intersection of two microchannels as recited in claims 1, 19 and 28 and illustrated in FIG. 5. Examiner cites FIGS. 12, 13, 15 and 16 of Griffiths in support of his assertion. Notwithstanding Examiner's creative rendition of the geometry of Griffiths channel structure, careful examination of the cited figures shows that nowhere do the various channels intersect to form a junction. Rather, the channels in Griffiths converge at a common junction. The term intersection is defined as "piercing or dividing by passing through or across" (Webster's Third New International Dictionary, 1971). Thus, it can be readily appreciated that nowhere does Griffiths disclose or suggest the claimed microchannels joined together to form a junction at their intersection.

Finally, claims 1, 19 and 28 include the further limitation that the region of reduced effective cross-sectional area extend into the microchannel a distance of from about 0.5 to 4 microchannel widths. Because Griffiths is only directed to a method for reducing sample dispersion in the turns in microchannel devices (Abstract and col. 13, 1-5) he is solely concerned with the geometry of the turns, specifically that the constricted portion of a low-dispersion branching junction should generally have a width that is between 20% and 80% of the width of the outlet ends (col. 14, 61-67). Whereas, the instant invention is directed to a method for reducing sample dispersion and cross-contamination due to intrusion of electric field lines and hydrostatic pressure effects (p. 5, 23-25). Consequently, the inventor has shown that the benefit of the invention is felt within the first 3-4 microchannel widths and 96% of the benefit is obtained within the first microchannel width from the junction. Nowhere does Griffiths disclose or suggest the claimed limitation that the region of reduced cross-sectional area extend into the microchannel a distance of from about 0.5 to 4 microchannel widths.

Insofar as claim 19, the claim recites, in part, a first and a second branching junction, wherein each branching junction has one inlet channel

and two outlet channels and wherein the inlet channels of said first and second branching junctions are joined together to form a junction. In rejecting claim 19 over Griffiths Examiner cites FIGS. 15 and 16 of Griffiths in support of the rejection. Careful examination of these figures shows that, in contrast, to the claimed orientation, in Griffiths the outlet channel of one branch is joined to the inlet channel of a second branch; an orientation totally different than claimed.

Claims 1, 10 and 31 are rejected under 35 USC §102(e) as being anticipated by Christel (6,368,871). Applicant traverses the rejection.

Christel is directed to a device and method for manipulation of fluids having at least first and second channels for carrying first and second fluid streams, respectively, wherein the first and second channels converge to a common channel (claim 1 and FIG. 1e). Nowhere does Christel teach, disclose or suggest the claimed two microchannels joined together to form a junction at their intersection having a reduced cross-sectional area proximate the junction that extends from the junction into the microchannel a distance of from about 0.5 to 4 microchannel widths (claim 1). Claims 10 and 31 having been canceled that rejection is now moot.

Claims 1 and 10 are rejected under 35 USC §102(e) as being anticipated by Marz (6,540,896). Applicant traverses the rejection.

Marz is directed to a microfluidic device for affecting serial to parallel conversion of materials introduced into a device. Materials to be converted from a serial orientation into a parallel orientation are introduced into an open chamber and then redirected in the chamber toward and into a plurality of parallel channels that also communicate with the chamber (abstract and FIGS. 3A and 3B). Nowhere does Marz teach, disclose or suggest the claimed two microchannels joined together to form a junction at their intersection having a reduced effective cross-sectional area proximate the junction that extends from the junction into

the microchannel a distance of from about 0.5 to 4 microchannel widths of (claim 1). Claim 10 having been canceled, that rejection is now moot.

It is well settled that to establish a *prima facie* case of anticipation each and every element set forth in the claim must be identically disclosed in the reference either expressly or inherently. As Applicant has shown above such is not the case with Griffiths, Christel or Marz. Therefore, Applicant respectfully requests reconsideration and allowance of claims 1, 19 and 28-30.

#### Rejection under 35 USC 103

Claims 2-5, 11-14 and 20-23 are rejected under 35 USC §103(a) as being unpatentable over Griffiths (6,270,641). Claims 2, 5, 11, 14 and 20 having been canceled, the rejection now applies only to remaining claims 3, 4, 12, 13 and 21-23. Applicant traverses the rejection.

35 USC §103 (c) provides that subject matter developed by another person, which qualifies as prior art only under one or more subsections (e), (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. Applicant declares that U.S. Patent 6,270,641 and the instant invention are both assigned to and owned by Sandia Corporation, Albuquerque New Mexico. Consequently, Applicant urges that under the provision of 35 USC §103(c) the rejection of claims 3, 4, 12, 13 and 21-23 over Griffiths is misapplied.

Claims 2, 5, 11 and 14 are rejected as unpatentable under 35 USC §103(a) as being unpatentable over Christel (6,368,871).

Claims 2, 5, 11 and 14 having been canceled the rejection is moot.

#### Claim Objections


Claims 19 and 23 are objected because of various informalities. The informalities having been corrected by amendment, Applicant respectfully requests that the objection be withdrawn.

## CONCLUSION

The rejections of claims 1, 19 and 28-30 under 35 USC §102 and claims 3, 4, 12, 13 and 21-23 under 35 USC §103 have been overcome and the objections to claims 19 and 23 have been cured. Applicant requests entry of new claims 32 and 33 and that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

Date: 06/21/2005

  
Donald A. Nissen  
Registration No. 44,261  
1025 NW Couch St. #1212  
Telephone (503) 226-8025

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Application No: 09/669,862

For Applicant: Hasselbrink, Jr.